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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,757	09/19/2003	Glenn J. Leedy	ELM-1 CONT. 9	6828
7590 08/09/2007				
PHILIP R POH FISH & NEAVE 1251 AVENUE OF THE AMERICAS NEW YORK, NY 10020-1105				
			EXAMINER	
			PERKINS, PAMELA E	
			ART UNIT	PAPER NUMBER
			2822	
			MAIL DATE	DELIVERY MODE
			08/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/665,757

Applicant(s)

LEEDY, GLENN J.

Examiner

Pamela E. Perkins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2007.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) See Continuation Sheet is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Disposition of Claims: Claims pending in the application are 158-228,230-291,394-399,409-424,448-455,457-460,462-464,466-468,470-485 and 523-530.

Continuation of Disposition of Claims: Claims rejected are 156,158-228,230-291,394-399,409-424,448-455,457-460,464,466-468,470-485 and 523-530.

DETAILED ACTION

This office action is in response to the filing of the RCE on 30 July 2007. Claims 156, 158-228, 230-291, 394-399, 409-424, 448-455, 457-460, 462-464, 466-468, 470-485 and 523-530 are pending; claims 1-155, 157, 229, 292-393, 400-408, 425-447, 456, 461, 465, 469 and 486-522 have been cancelled.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 156, 158-165, 167, 169-175, 177, 220, 222-225, 227, 228, 230-234, 236-241, 243-252, 254, 255, 267-269, 271, 272, 274, 275, 286, 287, 289, 290, 394, 395, 397-399, 409-412, 419-424, 451, 452, 457, 474, 475, 479, 480, 484 and 485 are rejected under 35 U.S.C. 103(a) as being unpatentable over Findler et al. (5,071,510) in view of Mattox et al. (4,825,277).

Referring to claims 156, 160, 165, 167, 169, 172, 175, 177, 220, 223, 232, 234, 236, 239, 245, 248, 268, 271, 274, 286, 289, 451, 474, 479 and 484, Findler et al. disclose a method of making an integrated circuit where a substrate (1) has a principal surface; forming circuitry having active devices at least one of in and on the principal surface of the substrate (1); depositing a silicon nitride dielectric membrane/layer (6) as part of the circuitry; and removing a major portion the substrate (1) throughout a full

extent thereof without impairing the structural integrity of the integrated circuit (Fig. 1; col. 5, lines 5-33). Although Findler et al. do not specifically disclose the silicon nitride dielectric layer as a stress-controlled dielectric membrane/layer, it is inherently so because applicant's stress-controlled dielectric membrane/layer is silicon nitride. Therefore the silicon nitride dielectric layer disclosed in Findler et al. is capable of forming at least one of flexible membrane, an elastic membrane, and a free standing membrane.

Findler et al. do not disclose the stress of the stress-controlled dielectric layer is less than about 8×10^8 dynes/cm².

Mattox et al. disclose a substantially flexible integrated circuit while retaining its structural integrity to the semiconductor surface (col. 9, lines 1-13). Mattox et al. further disclose a surface stress between -1 to 2×10^9 dynes/cm² (Fig.3; col. 7, lines 45-52). It is noted that the specification contains no disclosure of either the critical nature of the claimed concentrations or any unexpected results arising there from. It would have been obvious to one of ordinary skill in the art for the stress of the stress-controlled dielectric layer is less than about 8×10^8 dynes/cm² since it has been held that "In such an situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990) See MPEP § 2144.05.

Since Findler et al. and Mattox et al. are both from the same field of endeavor, a flexible integrate circuit, the purpose disclosed by Mattox et al. would have been

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recognized in the pertinent art of Findler et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Findler et al. by the stress of the stress-controlled dielectric layer is less than about 8×10^8 dynes/cm² as taught by Mattox et al. to have controlled stress relative to the semiconductor surface (col. 2, lines 5-10).

Referring to claim 159, 163, 171, 228, 244, 255, 267, 269, 272, 275, 287 and 290, Mattox et al. disclose the stress as tensile (abstract).

Referring to claims 161, 173, 233, 237 and 249, Findler et al. disclose depositing the at least one of the silicon nitride dielectric films using Plasma Enhanced Chemical Vapor Deposition (col. 6, lines 13-17).

Referring to claims 164, 174, 222, 238 and 250, Findler et al. disclose wherein the substrate is a silicon wafer (abstract).

Referring to claims 224, 230, 240, 246 and 251, Findler et al. disclose wherein the major portion of the substrate is removed prior to forming the circuitry (col. 7, lines 13-21).

Referring to claims 225, 231, 241, 247 and 252, Findler et al. disclose wherein the major portion of the substrate is removed after forming the circuitry (col. 7, lines 13-21).

Referring to claims 394, 395 and 397-399, Findler et al. disclose forming a barrier layer (2) in the substrate (1) parallel to the principal surface before forming the circuit devices, the principal surface overlying the barrier layer (2) (col. 5, lines 15-20).

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Referring to claims 409, 411, 419, 421 and 423, Findler et al. disclose wherein the at least one or more stress-controlled dielectric layers are formed from an inorganic dielectric material (col. 5, lines 29-33).

Referring to claims 410, 412, 420, 422 and 424, Findler et al. disclose wherein at least a major portion of the inorganic dielectric material is formed from a nitride of silicon (col. 5, lines 29-33).

Referring to claims 452, 457, 475, 480 and 485 Findler et al. do not disclose forming the elastic low stress/stress-controlled dielectric membrane/layer at a temperature of about 400°C. It would have been obvious to one having ordinary skill in the art at the time invention was made to forming the elastic low stress/stress-controlled dielectric membrane/layer at a temperature of about 400°C disclosed in the claimed invention, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233 (CCPA 1955).

Claims 166, 168, 176, 178, 215, 216, 221, 226, 235, 242, 253, 262-264, 270, 273, 276, 288, 291, 298, 300, 336, 338, 345, 352, 366, 523, 524 and 528-530 are rejected under 35 U.S.C. 103(a) as being unpatentable over Findler et al. in view of Mattox et al. as applied to claims 156, 169, 220, 234 and 245 above, and further in view of Shimizu et al. (4,618,397).

Findler et al. in view of Mattox et al. disclose the subject matter claimed above except the integrated circuit being able to be thinned to about 50 microns or less throughout a full extent thereof while retaining its structural integrity.

Shimizu et al. disclose a method of making an integrated circuit where a substrate (1) has a principal surface; and forming circuit devices/circuitry/active devices (4) on the principal surface (col. 1, lines 29-44).

Referring to claims 166, 168, 176, 178, 215, 216, 221, 226, 235, 242, 253, 262-264, 270, 273, 276, 288, 291, 298, 300, 336, 338, 345, 352, 366, 523, 524 and 528-530, Shimizu et al. disclose the integrated circuit being able to be thinned to about 25 microns throughout a full extent thereof while retaining its structural integrity (col. 1, lines 45-56).

Since Findler et al. and Shimizu et al. are both from the same field of endeavor, a method of making an integrated circuit, the purpose disclosed by Shimizu et al. would have been recognized in the pertinent art of Findler et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Findler et al. by the integrated circuit being able to be thinned to about 25 microns throughout a full extent thereof while retaining its structural integrity as taught by to prevent defects (col. 1, lines 38-44).

Claims 179-185, 187, 189-194, 196, 207-214, 256-261, 265, 266, 277, 278, 281, 284, 396, 413, 414, 415, 416, 448, 453, 458, 471, 476 and 481 are rejected under 35 U.S.C. 103(a) as being unpatentable over Findler et al. in view of Mattox et al. and in view of Stein (4,070,230).

Findler et al. in view of Mattox et al. disclose the subject matter claimed above except transferring information through the interconnections formed passing through the stress-controlled dielectric layer.

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Referring to claims 179, 182, 185, 187, 189, 192, 194, 196, 207-214, 256-261, 265, 266, 277, 280, 448,453, 458, 462, 466, 471, 476 and 481, Stein discloses a method of making an integrated circuit where a substrate (1) has a principal surface; forming circuit devices/circuitry/active devices (8) on the principal surface; and forming a layer (9) overlying the circuit devices (8) (col. 4, lines 27-55). Stein further discloses the integrated circuit able to have a major portion of the substrate (1) removed throughout a full extent thereof while retaining its structural integrity (col. 5, lines 7-24). Stein also discloses transferring information through interconnections formed passing through the layer, wherein the interconnections are at least one of electrical and optical interconnections (col. 5, lines 32-41).

Since Findler et al. and Stein are both from the same field of endeavor, a method of making an integrated circuit, the purpose disclosed by Stein would have been recognized in the pertinent art of Findler et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Findler et al. by transferring information through interconnections formed passing through the layer as taught by Stein to prevent defects (col. 1, lines 22-48).

Referring to claims 181, 191, 278, 281 and 284, Mattox et al. disclose the stress as tensile (abstract).

Referring to claims 183 and 193, Findler et al. disclose depositing the at least one of the silicon nitride dielectric films using Plasma Enhanced Chemical Vapor Deposition (col. 6, lines 13-17).

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Referring to claim 184, Findler et al. disclose wherein the substrate is a silicon wafer (abstract).

Referring to claims 277 and 280, although Findler et al. do not specifically disclose the silicon nitride dielectric layer as a stress-controlled dielectric membrane/layer, it is inherently so because applicant's stress-controlled dielectric membrane/layer is silicon nitride. Therefore the silicon nitride dielectric layer disclosed in Findler et al. is capable of forming at least one of flexible membrane, an elastic membrane, and a free standing membrane.

Referring to claim 396, Findler et al disclose forming a barrier layer (2) in the substrate (1) parallel to the principal surface before forming the circuit devices, the principal surface overlying the barrier layer (2) (col. 5, lines 15-20).

Referring to claims 413 and 415, Findler et al. disclose wherein the at least one or more stress-controlled dielectric layers are formed from an inorganic dielectric material (col. 5, lines 29-33).

Referring to claims 414 and 416, Findler et al. disclose wherein at least a major portion of the inorganic dielectric material is formed from a nitride of silicon (col. 5, lines 29-33).

Referring to claims 462 and 466, Findler et al. do not disclose forming the elastic low stress/stress-controlled dielectric membrane/layer at a temperature of about 400°C. It would have been obvious to one having ordinary skill in the art at the time invention was made to forming the elastic low stress/stress-controlled dielectric membrane/layer at a temperature of about 400°C disclosed in the claimed invention, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering

the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233 (CCPA 1955).

Claims 186, 188, 195, 197, 217, 218, 279, 282, 525 and 526 are rejected under 35 U.S.C. 103(a) as being unpatentable over Findler et al. in view of Mattox et al. and in view of Stein as applied to claims 179 and 189 above, and further in view of Shimizu et al.

Findler et al. in view of Mattox et al. and in view of Stein disclose the subject matter claimed above except the integrated circuit being able to be thinned to about 50 microns or less throughout a full extent thereof while retaining its structural integrity.

Shimizu et al. disclose a method of making an integrated circuit where a substrate (1) has a principal surface; and forming circuit devices/circuitry/active devices (4) on the principal surface (col. 1, lines 29-44).

Referring to claims 186, 188, 195 and 197, Shimizu et al. disclose the integrated circuit being able to be thinned to about 25 microns throughout a full extent thereof while retaining its structural integrity (col. 1, lines 45-56).

Since Findler et al. and Shimizu et al. are both from the same field of endeavor, a method of making an integrated circuit, the purpose disclosed by Shimizu et al. would have been recognized in the pertinent art of Findler et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Findler et al. by the integrated circuit being able to be thinned to about 25 microns throughout a full extent thereof while retaining its structural integrity as taught by to prevent defects (col. 1, lines 38-44).

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Claims 198-203, 205, 283, 417, 418 and 470 are rejected under 35 U.S.C. 103(a) as being unpatentable over Findler et al. in view of Mattox et al. and in view of Bergmans et al. (4,835,765).

Findler et al. in view of Mattox et al. disclose the subject matter claimed above except an integrated circuit having a data source formed on a first portion of the integrated circuit, a data sink formed on a second portion of the integrated circuit, and transferring a plurality of data bytes between the data source and data sink of an interconnect circuitry of the integrated circuit.

Referring to claim 198, Bergmans et al. disclose a method of using an integrated circuit having a data source (7) formed on a first portion of the integrated circuit (1), a data sink (13) formed on a second portion of the integrated circuit (1), interconnect circuitry interconnecting the data source (7) and the data sink (13); transferring a plurality of data bytes between the data source (7) and data sink (13) of the interconnect circuitry of the integrated circuit (1) (col. 3, lines 30-51).

Since Findler et al. and Bergmans et al. are both from the same field of endeavor, a method of using an integrated circuit, the purpose disclosed by Bergmans et al. '663 would have been recognized in the pertinent art of Findler et al.. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Findler et al. by having an integrated circuit having a data source formed on a first portion of the integrated circuit, a data sink formed on a second portion of the integrated circuit, and transferring a plurality of data bytes between the data

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source and data sink of an interconnect circuitry of the integrated circuit as taught by Bergmans et al. to reduce defects (col. 3, lines 52-64).

Referring to claim 200, Mattox et al. disclose the stress as tensile (abstract).

Referring to claim 201, Findler et al. disclose depositing at least one silicon nitride dielectric membrane/layer (6) (col. 5, lines 5-33).

Referring to claims 202, Findler et al. disclose depositing the at least one of the silicon nitride dielectric films using Plasma Enhanced Chemical Vapor Deposition (col. 6, lines 13-17).

Referring to claims 203 and 205, Findler et al. disclose removing a major portion the substrate (1) throughout a full extent thereof without impairing the structural integrity of the integrated circuit (Fig. 1; col. 5, lines 5-33).

Referring to claim 283, although Findler et al. do not specifically disclose the silicon nitride dielectric layer as a stress-controlled dielectric membrane/layer, it is inherently so because applicant's stress-controlled dielectric membrane/layer is silicon nitride.

Therefore the silicon nitride dielectric layer disclosed in Findler et al. is capable of forming at least one of flexible membrane, an elastic membrane, and a free standing membrane.

Referring to claim 417, Findler et al. disclose wherein the at least one or more stress-controlled dielectric layers are formed from an inorganic dielectric material (col. 5, lines 29-33).

Referring to claim 418, Findler et al. disclose wherein at least a major portion of the inorganic dielectric material is formed from a nitride of silicon (col. 5, lines 29-33).

Referring to claim 470, Findler et al. do not disclose forming the elastic low stress/stress-controlled dielectric membrane/layer at a temperature of about 400°C. It would have been obvious to one having ordinary skill in the art at the time invention was made to forming the elastic low stress/stress-controlled dielectric membrane/layer at a temperature of about 400°C disclosed in the claimed invention, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233 (CCPA 1955).

Claims 204, 206, 219, 285 and 527 are rejected under 35 U.S.C. 103(a) as being unpatentable over Findler et al. in view of Mattox et al. and in view of Bergmans et al. as applied to claim 198 above, and further in view of Shimizu et al.

Findler et al. in view of Mattox et al. and in view of Bergmans et al. disclose the subject matter claimed above except the integrated circuit being able to be thinned to about 50 microns or less throughout a full extent thereof while retaining its structural integrity.

Shimizu et al. disclose a method of making an integrated circuit where a substrate (1) has a principal surface; and forming circuit devices/circuitry/active devices (4) on the principal surface (col. 1, lines 29-44).

Referring to claims 204, 206, 219, 285 and 527, Shimizu et al. disclose the integrated circuit being able to be thinned to about 25 microns throughout a full extent thereof while retaining its structural integrity (col. 1, lines 45-56).

Since Findler et al. and Shimizu et al. are both from the same field of endeavor, a method of making an integrated circuit, the purpose disclosed by Shimizu et al. would have been recognized in the pertinent art of Findler et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Findler et al. by the integrated circuit being able to be thinned to about 25 microns throughout a full extent thereof while retaining its structural integrity as taught by to prevent defects (col. 1, lines 38-44).

Claims 449, 450, 454, 455, 472, 473, 477, 478, 482 and 483 are rejected under 35 U.S.C. 103(a) as being unpatentable over Findler et al. in view of Mattox et al. as applied to claims 156, 169, 220, 234 and 245 above, and further in view of Rubinstein et al. (5,227,959).

Findler et al. in view of Mattox et al. disclose the subject matter claimed above except forming at least one flexible integrated circuit.

Referring to claims 449, 450, 454, 455, 472, 473, 477, 478, 482 and 483, Rubinstein et al. disclose a method of making integrated circuit where a flexible circuit (36) is formed over a substrate (10) (col. 4, lines 53-65).

Since Findler et al. and Rubinstein et al. are both from the same field of endeavor, a method of making integrated circuit, the purpose disclosed by Rubinstein et al. would have been recognized in the pertinent art of Findler et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Findler et al. by forming at least one flexible integrated circuit as taught by

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Rubinstein et al. to reduce cross talk by controlling impedance (col. 3, lines 58-62; col. 6, lines 6-8).

Claims 459, 460, 463 and 464 are rejected under 35 U.S.C. 103(a) as being unpatentable over Findler et al. in view of Mattox et al. and in view of Stein as applied to claims 179 and 189 above, and further in view of Rubinstein et al.

Findler et al. in view of Mattox et al. and in view of Stein disclose the subject matter claimed above except forming at least one flexible integrated circuit.

Referring to claims 449, 450, 454, 455, 472, 473, 477, 478, 482 and 483, Rubinstein et al. disclose a method of making integrated circuit where a flexible circuit (36) is formed over a substrate (10) (col. 4, lines 53-65).

Since Findler et al. and Rubinstein et al. are both from the same field of endeavor, a method of making integrated circuit, the purpose disclosed by Rubinstein et al. would have been recognized in the pertinent art of Findler et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Findler et al. by forming at least one flexible integrated circuit as taught by Rubinstein et al. to reduce cross talk by controlling impedance (col. 3, lines 58-62; col. 6, lines 6-8).

Claims 467 and 468 are rejected under 35 U.S.C. 103(a) as being unpatentable over Findler et al. in view of Mattox et al. and in view of Bergmans et al. as applied to claim 198 above, and further in view of Rubinstein et al.

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Findler et al. in view of Mattox et al. and in view of Bergmans et al. disclose the subject matter claimed above except forming at least one flexible integrated circuit.

Referring to claims 467 and 468, Rubinstein et al. disclose a method of making integrated circuit where a flexible circuit (36) is formed over a substrate (10) (col. 4, lines 53-65).

Since Findler et al. and Rubinstein et al. are both from the same field of endeavor, a method of making integrated circuit, the purpose disclosed by Rubinstein et al. would have been recognized in the pertinent art of Findler et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Findler et al. by forming at least one flexible integrated circuit as taught by Rubinstein et al. to reduce cross talk by controlling impedance (col. 3, lines 58-62; col. 6, lines 6-8).

Response to Arguments

Applicant's arguments with respect to claims 156, 158-228, 230-291, 394-399, 409-424, 448-455, 457-460, 462-464, 466-468, 470-485 and 523-530 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pamela E. Perkins whose telephone number is (571)

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272-1840. The examiner can normally be reached on Monday thru Friday, 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on (571) 272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PEP
1 August 2007



Mary Wilczewski
Primary Examiner